

THE CONNECTIVITY OF DOMINATION
DOT-CRITICAL GRAPHS WITH NO
CRITICAL VERTICES

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Abstract

An edge of a graph is called dot-critical if its contraction decreases the domination number. A graph is said to be dot-critical if all of its edges are dot-critical. A vertex of a graph is called critical if its deletion decreases the domination number.

In *A note on the domination dot-critical graphs*, *Discrete Appl. Math.* **157** (2009) 3743–3745, Chen and Shiu constructed for each even integer $k \geq 4$ infinitely many k -dot-critical graphs G with no critical vertices and $\kappa(G) = 1$. In this paper, we refine their result and construct for integers $k \geq 4$ and $l \geq 1$ infinitely many k -dot-critical graphs G with no critical vertices, $\kappa(G) = 1$ and $\lambda(G) = l$. Furthermore, we prove that every 3-dot-critical graph with no critical vertices is 3-connected, and it is best possible.

Keywords: dot-critical graph, critical vertex, connectivity.

2010 Mathematics Subject Classification: 05C69.

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Received 8 July 2013
Revised 20 September 2013
Accepted 30 September 2013